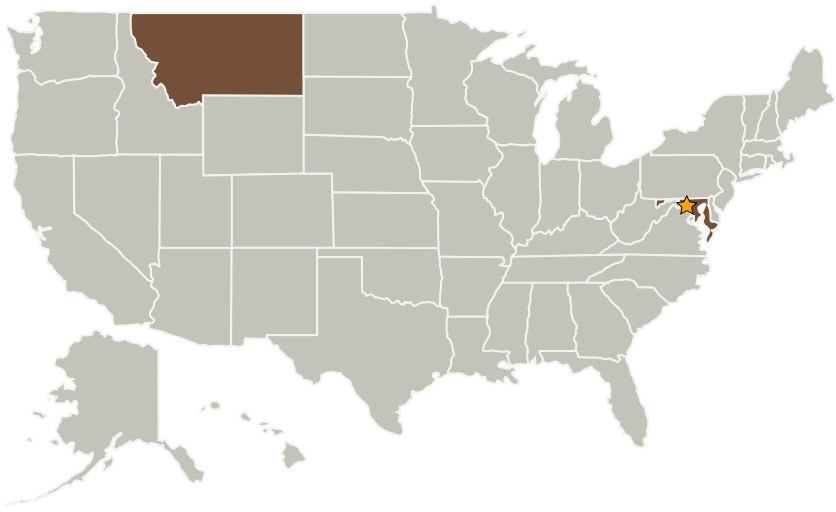
Highly Efficient, Compact, Wavelength Converters for Pulsed and CW Laser Sources Used in Lidar-Based Remote Sensing and Ranging Systems, Phase II

Completed Technology Project (2007 - 2009)

Project Introduction

AdvR, Inc. proposes the development of a highly efficient, fiber pigtailed, waveguide-based UV frequency converter module. This UV module will be an important element in future NASA sponsored Doppler lidar and High Spectral Resolution Lidar (HSRL) aerosol missions. The key innovation is the use of dual-element periodically poled waveguides embedded in a nonlinear optical substrate. This innovation results in a vast improvement in the measurement capabilities of lidar systems by enabling the use of a single stabilized laser to both operate a high power transmitter and generate low power frequency tripled light for synchronous calibration and frequency locking of the Fabry Perot filter on the lidar receiver. To be used in a space-based system, the UV module must be rugged and must perform optimally in a radiation environment over the mission lifetime. To achieve this goal, the proposed dual-element structure will be packaged in a compact, robust fiber-pigtailed package which will readily lend itself to future space qualification for mechanical stability of the package and radiation damage resistance of the non-linear optical material.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
ADVR, Inc.	Supporting Organization	Industry	Bozeman, Montana

Primary U.S. Work Locations	
Maryland	Montana

Project Transitions

December 2007: Project Start

December 2009: Closed out

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers